



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,966	11/24/2003	Tsing-Tang Song	250913-1030	5221
24504	7590	12/13/2005	EXAMINER	
THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP 100 GALLERIA PARKWAY, NW STE 1750 ATLANTA, GA 30339-5948			CHU, JOHN S Y	
			ART UNIT	PAPER NUMBER
			1752	

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/720,966

Applicant(s)

SONG ET AL.

Examiner

John S. Chu

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 6-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 6-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

This Office action is in response to the amendment filed September 30, 2005.

1. The rejection under 35 U.S.C. 102(e) as being clearly anticipated by MELISARIS et al 2002/0177073 is **withdrawn** in view of the amendment to claim 1 wherein the claim now recites an unsaturated resin with a specified molecular weight and a specified acid value in mg KOH/g.

New rejections are made in view of the amended claims:

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 6-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over NOJIMA et al (6,399,277).

The claimed invention is drawn to the following:

1. (Currently amended): A negative photoresist composition with multi-reaction systems, comprising the following components as a uniform solution in an organic solvent:

at least one ~~saturated or~~ unsaturated resin having a molecular weight in the range from 5,000 to 250,000 and an acid value between 50 and 250mgKOH/g, selected from the group consisting of homopolymers, copolymers, and combinations thereof, which the homopolymers and the copolymers are synthesized by at least one monomer selected from the group consisting of styrene, methyl styrene, acrylic acid, acrylate, methyl acrylic acid, methyl acrylate, vinyl ether, and combinations thereof;

at least one photoinitiator in an amount of 0.1 to 35 parts by weight, based on 100 parts by weight of the ~~saturated or~~ unsaturated resin;

at least one free radical reactive monomer in an amount of 0.1 to 100 parts by weight;

at least one photoacid generator in an amount of 0.1 to 35 parts by weight; and

at least one cation reactive monomer in an amount of 0.1 to 35 parts by weight.

NOJIMA et al discloses a photopolymerizable thermosetting resin composition comprising an unsaturated resin, a diluent (represented by an photopolymerizable vinyl type monomer), a photopolymerization initiator, a setting adhesion-imparting initiator (see column 12, line 63 – column 13, line 53 wherein lines 33-39 , which disclose onium photoacid generating compounds), and an epoxy group-containing compound (meets the claimed cation reactive monomer). The compositional ingredients can be found in column 4, lines 26-34 wherein each of the components, which desired is disclosed.

NOJIMA et al lacks a working example with a photoacid generator. Here applicants are directed to column 13, lines 32-35 for the photoacid generating compounds which are seen as functionally equivalent to the listed setting-adhesion imparting agents defined as component (D).

It would have been prima facie obvious to one of ordinary skill in the art of photopolymerizable thermosetting composition to insert a triphenylsulfonium hexafluoroantimonate in for the setting-adhesion imparting agent of dicyandiamide with the reasonable expectation of same or similar results for excellent properties for a solder resist like soldering resistance, solvent resistance, and chemical resistance.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. NISHIKUBO et al (2003/0009053) discloses a composition having a unsaturated monocarboxylic ester compound, a photoinitiator, a diluent and an epoxy compound. The reference fails to recite the claimed parts by weight as claimed in the current application and lacks the disclosure for an acid generating compound.

IMAI et al (6,140,025 and 6,660,457) are cited of interest as disclosing photosensitive resin composition comprising a photocurable composition. The references fail to teach the

Art Unit: 1752

combination of the photoinitiator and the claimed photoacid generator in the specified weight amounts as claimed.

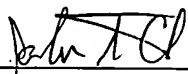
YOSHITAKE et al is cited of interest and is cumulative to the NOJIMA et al as to the disclosure of a solder resist composition.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chu whose telephone number is (571) 272-1329. The examiner can normally be reached on Monday - Friday from 9:30 am to 6:00 pm.

The fax phone number for the USPTO is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PMR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John S. Chu
Primary Examiner, Group 1700

J.Chu
December 11, 2005